SECTION 622
GEOSYNTHETICS CONSTRUCTION

622.01 DESCRIPTION. This work is furnishing and installing geosynthetic materials.

622.02 MATERIALS. Furnish materials meeting the following requirements:

Geotextiles & Geomembranes	Subsection 713.13
Drain Aggregate	Subsection 701.10
Geocomposites and Geogrids	As Specified

622.02.1 Classification. Geosynthetic materials include geotextiles, geomembranes, geocomposites, and geogrids, defined as follows:

- **A. Geotextiles.** Any permeable textile used with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of a project, structure, or system. Major functions include drainage, erosion control, separation and stabilization, sediment control, and pavement reinforcement.
- **B. Geomembranes.** An essentially impermeable membrane used as a liquid or vapor barrier with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of a project, structure, or system. Geomembranes are used in applications where a liquid or vapor barrier is required.
- **C. Geocomposites.** A manufactured material using geotextiles, geogrids, geonets, and/or geomembranes in laminated or composite form. Major functions include separation, reinforcement, filtration, drainage, and moisture barriers.
- **D. Geogrids.** A deformed or non-deformed grid-like polymeric material formed by intersecting ribs joined at the junctions used for reinforcement with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of a project, structure, or system.

622.02.2 Sampling and Acceptance. Clearly label each roll of geosynthetic shipped to the project with the name and address of the manufacturer, type or grade, product name, quantity, month and year of manufacture, and lot number. Supply with each lot, 2 copies of a notarized manufacturer's certificate of compliance signed by an authorized manufacturer's official. The certificate must attest that the geosynthetic supplied meets all the requirements specified in Subsection 713.13. Submit the Certificates of Compliance to the Project Manager when the material arrives on the project.

Cut samples from the rolls delivered to the project, as directed and witnessed by the Project Manager. Cut at least a 1½ foot long (460 mm) strip the full length of the roll beyond the first wrap. Submit one sample every 10,000 square yards (8,360 m^2) per lot.

Install geosynthetics only after the material has been tested and accepted.

622.02.3 Shipment and Storage. Protect geosynthetics during shipment and storage from direct sunlight, ultraviolet rays, temperatures exceeding 140 °F (60 °C), mud, dirt, dust, and debris following the manufacturers recommendations.

622.03 CONSTRUCTION REQUIREMENTS.

622.03.1 Installation Requirements.

A. General. Dispose of material with defects, rips, holes, flaws, deterioration, or other damage. Do not use defective material in the work.

Prepare the surface to receive the material by smoothing, removing objects harmful to the geosynthetic, leveling depressions, and removing debris and soft or low-density areas of surface material following the manufacturer's recommendations.

Place the geosynthetic without wrinkles and lap at least 2 feet (610 mm) at the ends and sides of adjoining sheets or as specified by the manufacturer, whichever is greater. Field sew lap if required.

Place stone, gravel, or other specified aggregate on the material without tearing, puncturing, or shifting. Repair or replace all torn or punctured material at Contractor expense. Make repairs following the manufacturer's recommendations or use a patch of the same material placed over the ruptured area, overlapped at least 3 feet (915 mm) from the edge of any part of the rupture. Sewing repairs are an acceptable alternate.

Follow the manufacturer's recommendations for securing the material in place on sloped surfaces and for riprap bedding installations.

Place the specified cover material on the geotextile within 5 working days of the geotextile installation.

B. Under Drains. Furnish and install geotextiles for under-drains that are specifically designed for this use and meet Subsection 713.13 requirements.

Construct under-drains as specified. Use drain aggregate specified in Subsection 701.10.

Place and compact the top 18-inches (460 mm) of the drain aggregate meeting the applicable requirements of Subsection 603.03.4 when installing under-drains under traffic lanes.

C. Erosion Control. Furnish and install geotextiles under riprap or gabions that are designed for this use and meet Subsection 713.13 requirements.

Place the geotextile with the long dimension parallel to the centerline of the channel. Make laps downstream and downslope.

Place riprap without puncturing, shifting, or damaging the geotextile. Fill all riprap face voids completely covering the geotextile.

Key the geotextile at least 18-inches (460 mm) into the ground at the top of the embankment. Finish the bottom (toe) by lapping the material back and secure with riprap, as specified.

D. Separation and Stabilization. Furnish and install geotextiles for separation and stabilization, designed for these applications that meet Subsection 713.13 requirements.

Do not operate vehicles and equipment directly on the geotextile when placing fill material.

Keep equipment wheels and tracks off of fabric laps when placing fill.

Place the first fill lift in a uniform layer, 15 to 20-inches (380 to 510 mm) loose thickness. Compact the top 8-inches (205 mm) using rubber-tired rollers. Do not use vibratory or sheepsfoot compaction equipment on the first lift. Do not operate haul units, crawler-type equipment, and other heavy equipment, excluding that used to place the fill, on the first lift until compacted. Use only rubber-tired rollers for compaction if any foundation failures occur when placing subsequent lifts. Compact all lifts to the moisture and density requirements for earth embankment specified in Subsection 203.03.3.

E. Sediment Control. Furnish and install geotextiles for sediment control (silt fences and brush barriers), designed for these applications and that meet Subsection 713.13 requirements.

Attach the material to the support system following the manufacturer's recommendations or as specified. Bury the bottom (toe) in a ground trench cut at least 6-inches (155 mm) deep. Backfill the geotextile bottom (toe) with soil if rock is encountered and a trench cannot be dug.

F. Paving. Furnish and install pavement geotextile as specified in the Contract.

G. Geomembranes. Furnish and install geomembranes as specified in the Contract.

H. Geocomposites and Geogrids. Furnish and install geocomposites and geogrids as specified in the Contract.

622.04 METHOD OF MEASUREMENT. Geosynthetics are measured by the square yard (square meter) as staked by the Project Manager. Measurement excludes laps, seams, and joints.

Aggregates are measured by the cubic yard (cubic meter) in place. If the Contract does not contain contract unit prices for the specified aggregate, the aggregate is not measured for payment.

622.05 BASIS OF PAYMENT. Payment for the completed and accepted quantities is made under the following:

Pay Item	Pay Unit
Geosynthetic	Square Yard (square meter)
Aggregate	Cubic Yard (cubic meter)

Payment at the contract unit price is full compensation for all resources necessary to complete the item of work under the Contract.